

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

62.09

THE AVOCADO

U.S. DEPT. OF AGRICULTURE
WASHINGTON



The famous Montezuma Avocado Tree, in Mexico. Said to be 200 years old. Measures 4 feet across at the base, and yields an annual crop of 3000 delicious fruits weighing one pound each.

The Avocado in California

Southern California is one of the two localities in the United States in which it is possible to grow the avocado. The other district is southern Florida.

In this restricted area must be grown the future avocado supply for the country. Competition from Mexico or the West India Islands will never be greater than it has been from those countries in the matter of the orange and other fruit productions. Tropical countries are not given to the rapid or successful development of their possibilities.

That the avocado will succeed splendidly in Southern California has been proven so conclusively that it is no longer questioned. There are probably one hundred bearing trees scattered over the southern end of the state from the cool sea coast to the hot and dry interior valleys. These range from five to thirty years in age, and though they are all seedlings, and the fruit produced by them is in many cases rather small and inferior, they have demonstrated beyond the possibility of a doubt that the avocado is pre-eminently adapted to this climate and a complete success in it.

It is, indeed, a reasonable statement and entirely within bounds to say that Southern California may fairly be regarded as possessing the conditions required for the highest development of this valuable fruit.

By reason of our rich, well-drained soil, our mild climate which will allow the growth and ripening of the fruit during the entire year, and the energy and enterprise that is a marked characteristic of our horticulturists and orchardists, the avocado will reach its perfection of development with us.

A mature budded tree should produce an average of five hundred fine fruits each year. While the price of such fruits now is from 25 to 50 cents each, with a large acreage this must decrease; but allowing a price of ten cents per fruit to the grower, which in view of all the circumstances may safely be regarded as the minimum price for all time to come, the profit per tree may easily be forecasted.

The adaptability of this fruit to its environment is such—thriving in Mexico from the seacoast level to an altitude of 8000 feet—that it is reasonably certain varieties can and will be propagated which will be entirely successful in the Imperial Valley and similar districts.

The commercial orchards which are now being planned or planted, by some of the most successful orchardists of the state, indicate plainly that the industry is already on a sure footing. Southern California will lead in avocado production and the profit from the industry will be greater than that to be had from raising any other fruit.



A fine type from Cuernavaca, Mexico. A round, thick skinned, purple, winter bearer. Weighs one pound.

Food Value of the Avocado

As a food product, the avocado is unquestionably an important factor to be reckoned with. Economists who have the ability to grasp matters horticultural are figuring it into the future food supply of the country at large as a competitor of meat, and are estimating its possibilities for replacing animal products with a wholesome and delicious vegetable food. As eminent and practical a horticulturist as Mr. Parker Earle, formerly president of the American Pomological society, is convinced of an immense future for the avocado. In a recent letter to the editor of the Pacific Garden, Mr. Earle says:

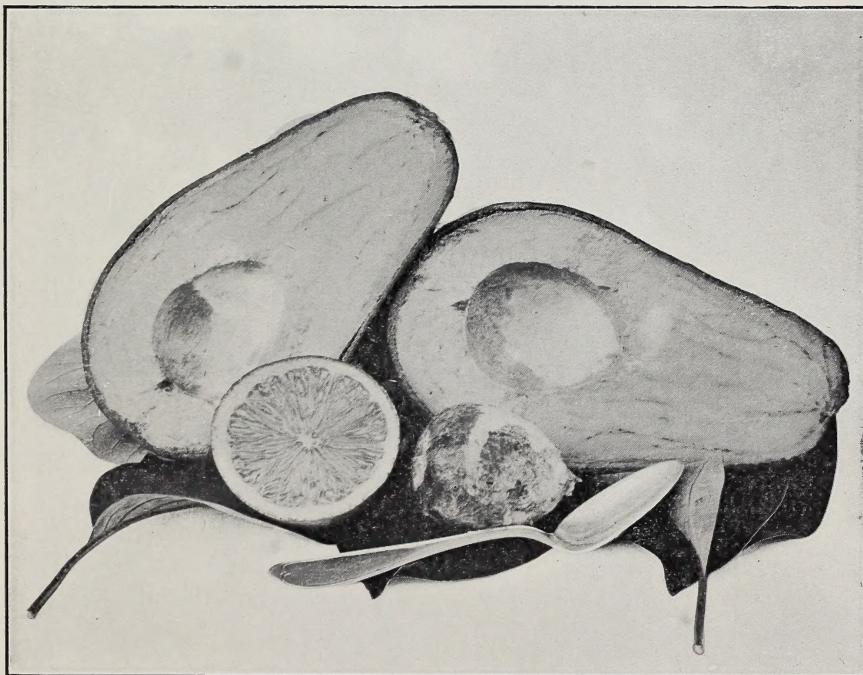
"An acre of land can produce, let us say, one quarter of a ton of beef, or other animal food, per year. It can produce one ton, or possibly two tons, of food in wheat, or corn, or rice. It can produce five, ten, or possibly twenty tons of an incomplete food ration in the form of apples, or grapes, or bananas. And there may be from one to two tons or more of very rich food in the form of nuts—notably pecans—from one acre of land. But with avocados there would seem to be a possible yield of food of very high nutritive value in tonnage equal to apples with their low nutritive value." Mr. Earle goes on to state that if men can produce many tons of food of best value from an acre of land in trees that can only yield a fraction of a ton in the form of animal food, it is pretty certain that they are going to plant trees. The crowding of men together in dense population will compel this. "In primitive conditions men turned to animals for food. It was a state of savagery. We are outgrowing it. Very soon there will be no room for animals that are grown to be eaten. It is compulsory. It is nature's way. We must get our food in greatest quantities from a minimum area of land. And we must have food containing the same elements that animals have been giving us. Among these substitutes does not the avocado offer itself as one of large possible importance?"

The one answer that can be made to Mr. Earle's inquiry is—it does.

As this fruit becomes known in northern markets the demand for it will become almost limitless, and the portion of the country where it can be successfully grown is limited. We advise planting avocados in this southern section and planting them in large acreages. It is the coming fruit.—The Home-seeker.



An Avocado Salad, made from a single fruit (the fruit shown below)—enough for from four to six persons.



W. I. G.'s "Nineteen", an exceptionally fine pear-shaped fruit weighing one and one-half pounds. The strong, thick skin can easily be seen. This fruit has an unusually large proportion of meat to seed.

The Mexican Avocado

While the avocado is grown extensively in South America, the West Indies, Hawaii, and other tropical countries, it has been grown in Mexico for centuries in vast numbers and at all altitudes from sea-level up to 8000 feet, and this Republic may well be called the great avocado country. Like other fruit trees grown from seed, the avocado comes true in only a small percentage of cases. Sometimes a seedling will be more valuable, sometimes less valuable, than the parent.

This natural variation from seed has led to the existence of innumerable varieties, embracing all seasons of fruiting and all sizes and characters of fruit. While the majority of avocados are good, and worth growing, some are so much more to be desired than others that it is well worth while to go to great trouble to secure the best; and some of these Mexican varieties are of such superior quality and value as to leave almost nothing to be desired.

To the search for the ideal fruit we have given much time and have invested a considerable sum of money. At the time this is written (November 1, 1911) one of our own explorers, a man who has lived for ten years in Mexico, is continuing this work, visiting the principal avocado districts, searching the markets for superior fruits, and tracing them back to the place of growth,—often a most difficult matter. When found, the qualifications of the “ideal avocado” are applied, and if the tree seems up to the requirements, samples of the fruit are forwarded and the tree marked. Subsequently budwood is sent us, if we decide to propagate that particular variety.

Thus Mexico may be considered a great experimental garden, in which have originated the choicest varieties of this most valuable fruit, and we are enabled by resorting to it to produce at once budded trees of the finest varieties,—fruits whose development, by the usual processes of plant breeding or selection, would take many years of time and the expenditure of a very large sum of money to secure.

The ahuate (avocado) is a great favorite in all tropical countries and does remarkably well in Southern California.—Dr. Franceschi.



Mexican Avocado, of Good Form and Size

Avocado Recipes

(When ready for use the fruit will yield to slight pressure of the thumb. The flesh of the ripe avocado is about the consistency of well made butter.)

AVOCADO AU NATUREL. Remove the skin and slice the fruit the desired thinness. Serve on a plate garnished with celery hearts, tomato, or sweet red pepper. To be eaten with a fork, with or without salt or pepper as preferred.

COSTA RICAN STYLE. Cut the fruit in half and remove the seed. In the cavity place one tablespoon of vinegar or lime juice; salt and pepper to taste. Serve one half fruit on plate, with spoon, to each person.

DICED AVOCADO. Remove skin and cut fruit in small squares. Add salt, pepper and vinegar, or any kind of salad dressing desired.

MEXICAN SALAD. To two parts of the diced fruit use one part of chopped Bermuda onion; salt, pepper and vinegar to taste. Sweet peppers, red or green, may be added if desired. Prepare two hours before serving.

CUBAN SALAD. Cut a small fruit in half and remove the seed. Prepare a dressing of a teaspoonful of sugar dissolved in the juice of a lime or half a lemon. In the cavity of the fruit place three stuffed olives and the desired quantity of dressing. Serve on a lettuce leaf, with spoon, one half fruit to each person.

HAWAIIAN SANDWICH. Remove skin and seed from one avocado. Mash the flesh, add salt, pepper, and a dash of vinegar or lime juice, and spread liberally on lettuce leaf between thin slices of buttered bread. This is a dainty way of serving the avocado, and a most delicious one.

SANTIAGO SALAD. Peel the fruit, remove the seed, and cut the flesh in cubes. Mix with mayonnaise or with chopped onion, lime juice and salt. Put in on a platter, piling it high in the center, and sprinkle finely chopped boiled egg over it.

AVOCADO WITH COLD FISH. A most appetizing form of serving the avocado is to mix equal parts of cold salmon or lobster with the diced fruit, and serve with mayonnaise.

AVOCADO ON THE HALF SHELL. Divide the fruit in half, and carefully remove the meat, to which add the yolk of a hard boiled egg and one tablespoonful of French dressing for each fruit. Pass through a sieve, and pile back in the shells as in bowls. Garnish the tops with the boiled whites of the eggs chopped fine, with a sprig of parsley, or with one small red pepper. This is only practicable with thick skinned varieties of the avocado.

SIMMONS SALAD. Half a medium sized fruit, two boiled potatoes, cold, half a small onion, one tart apple. Slice all very fine and place

in layers; pour over it two tablespoonsful of vinegar. Let it stand and just before serving add mayonnaise dressing mixed with one half tablespoonful of curry powder and one tablespoonful of sugar.

HAVANA STYLE. Take the meat of three avocados, add three tomatoes, having first removed the skin and core of these; add half a green pepper cut into fine shreds. Crush and pound this mass to a smooth mixture, and drain off the liquid. To the pulp add a teaspoonful or more of onion juice, a teaspoonful of salt and a tablespoonful of lime juice or vinegar. Mix thoroughly and serve at once.

COMBINATION SALAD. One large avocado, sliced thin; same amount of cold boiled potatoes, sliced thin; onion and parsley minced fine; two hard boiled eggs, sliced. Season with salt, pepper, oil and vinegar.

WITH CABBAGE. Chop the cabbage fine. Cut up as many avocados as desired, mash with a fork until light and creamy, mix with the chopped cabbage, season with salt, pepper and vinegar and stir thoroughly.

WITH BANANAS. Cut bananas and avocado meat into cubes and serve seasoned with salt, pepper, vinegar and onions as desired.

WITH NUTS. Take two ripe avocados and half a cup of nut meats. When ready to serve, pare and dice the avocados, add the chopped nuts, and mix with any good dressing.

WITH DATES. Peel the avocados and cut the meat into small cubes, adding an equal quantity of chopped dates. Mix with mayonnaise dressing and serve on lettuce leaf.

BRAZILIAN STYLE. Mash ripe avocados and mix smooth with port wine or lime juice to taste.

AVOCADO BUTTER. Pare the fruit and extract the seed. Mash the meat smooth and rub in one teaspoonful of olive oil to every two fruits. Season with salt and pepper to taste, and spread on bread.

IN SOUPS. The avocado is used extensively in the tropics in all kinds of meat soups. Cut in small cubes and add to the soup just before serving.

AS A BREAKFAST FOOD. The avocado is a particularly acceptable breakfast food, being very nourishing. Serve with salt, pepper and lime or lemon juice. In this form it is most easily digested.

AS A DESSERT. The avocado makes a delicious dessert cut in cubes and served with sugar and lemon juice or wine.

FOR INVALIDS. The avocado is recommended by physicians as a most desirable form of food for invalids. It is highly nutritious, containing as high as 18 per cent of fat in the best varieties, according to Government statistics, and yet is very easily digested, so that the most delicate person can eat it freely.



Lath House. Containing 40,000 Avocado Trees in Four-inch Pots,
at our Nurseries, Altadena

Plant Only Budded Trees

For commercial purposes no consideration should be given to any but budded trees of known varieties coming up to the commercial requirements of this fruit. The orchardist would not consider for a moment the planting of seedling trees of the orange, the peach, the apple or any other of our commercial fruits, and the inferiority of seedling trees is just as true with the avocado. The variation in time of fruiting, in size, character and quality of fruit would make the seedling trees unprofitable commercially, nor can they be entirely depended upon to bear at an early age or to bear prolificly.

BE SURE, however, that the tree you buy has been budded from absolutely first class stock.

Attention is called to that portion of this pamphlet entitled "The Commercial Avocado" for the characteristics that should be required in budded trees.

For home use, by a proper selection of varieties it is pos-



One-year-old Avocado Trees growing in our Nurseries at Altadena, ready for Budding

sible to have fruits of good quality maturing the year round.

Where a tree is planted solely with a view to the production of choice fruit in good quantity, the budded tree is the only one to consider.

Seedling Trees

The planting of seedling trees is strongly recommended where the double purpose of ornamentation and fruit-bearing is desired. They have been and are being used for this purpose in public parks and private gardens with marked success. As an ornamental shade tree the avocado will rank with any that are in general use; and when to their value in this respect there is added the production of fruit of very fair quality, the advantage of the free use of the seedling avocado is evident. The planting of a seedling tree not only beautifies the landscape but adds to our food supply a desirable product, and viewed in this way it will be seen that the overplanting of seedlings is an impossibility.

The Commercial Avocado

At the present moment the question of greatest importance to prospective avocado growers is "What are the best varieties for commercial purposes?"

1. SEASON

When the avocado comes to be known and valued as a food product, there will be a steady demand for it throughout the twelve months of the year. At present, however, there is the greatest demand during the winter months, when other fruits are scarce. The Florida growers have almost ceased to plant anything but winter bearing varieties, and it will be advisable for California orchardists to plant mainly of winter and early spring bearing sorts.

2. HARDINESS

While there are doubtless limited areas in Southern California where avocados from the West Indies and Hawaii will thrive, our experience leads to the belief that for general culture in California we must have hardier varieties than those localities ordinarily produce. Avocados from the Mexican highlands have proved to be hardy almost anywhere in Southern California, and suited to as large an area as the orange. There are many locations in Mexico where avocados are produced in quantity, where fully as low temperatures are experienced as are ever felt here. Indeed, it is stated by G. N. Collins, a well known authority, that he found in one locality in Mexico avocados growing and thriving where snow fell every winter. There are many fine Mexican and Central American varieties which possess the requisite of hardiness in a very satisfactory degree.

3. YIELD

Through propagation by budding a great difficulty experienced with the seedlings has been done away with, namely, the liability of the tree to bear sparsely. The orchardist does not, of course, want to plant a tree on which he cannot depend for a good crop. While the smaller types of avocados are almost invariably prolific bearers, the larger varieties when grown from seed are inclined to considerable variation in this respect. Through budding the prolific varieties may be propagated and all danger from this source done away with. The avocado is ordinarily a good bearer. It is not unusual for mature trees of the larger varieties to produce a crop of five hundred to one thousand fruits each season, and the small purple varieties are sometimes extraordinarily prolific, a single tree bearing as high as four thousand fruits in one season, in some instances.

4. SIZE.

A mistaken idea which is held by many prospective avocado growers is that the larger the fruit the better. The experience of

the Florida growers has proven conclusively that this is not the case when it comes to a question of marketing the fruit. A two or three-pound avocado is certainly a regal fruit, but will not prove half so profitable commercially as a smaller and consequently more prolific variety. From fifteen to twenty ounces would seem to be the most desirable size.

5. FORM

It has been found very desirable for shipping to have fruits of oval or round form. The necked varieties necessitate considerable more care in packing, and are much more liable to injury in transit. For local consumption, however, a pear shaped or "bottle-necked" fruit is as good as any other form.

6. UNIFORMITY

To facilitate packing, the product should be uniform in size as well as in form, and this also improves the appearance of the fruit as it lies in market.

7. COLOR

The attractiveness of a fruit is affected considerably by its color. Locally the purple varieties have sold somewhat more readily than the green ones, but when the people are thoroughly familiar with the avocado the color will probably make little difference, unless some particular color or shade is found to denote a particularly good fruit.

8. SKIN

A skin sufficiently thick and tough to stand shipment to great distances is a prime essential. This is found in many of the Mexican varieties.

9. FLAVOR

As with all other fruits, there is considerable difference in flavor and quality of avocados. This is, of course, a point which must be given first consideration, as a fruit of inferior quality would be undesirable in the extreme, even though it possessed all the other essential characteristics. Those containing the highest percentage of oil are naturally the most desirable from an economic standpoint, and having the highest percentage of fat they are ordinarily the finest flavored. The ideal avocado should have a nutty flavor and a smooth texture.

10. SEED

The seed should be tight in the cavity. It has been found that in shipping loose-seeded fruits, the seed in transit pounds the walls of its cavity and causes considerable injury to the flesh. This is a difficulty seldom met with in Mexican varieties. In size the seed should, of course, be as small as possible. In time a seedless variety will no doubt be developed, as has been done with the orange and other fruits.



The Sinaloa Avocado. A winter bearing, hardy Mexican variety of superior merit. Has a slightly rough, strong skin. A desirable commercial variety.



The California Trapp Avocado. This variety is similar in form to the popular Florida Trapp, but later in season of bearing, and has a larger proportion of meat to seed. Is also hardier.

Orchard Planting

Experience in Florida, where budded avocados have been grown for ten years, has shown that budding tends to dwarf the tree, and that budded trees require much less space than seedlings. They should be planted about 25x25 feet, and cultivated in the usual orchard fashion. Prune to form a symmetrical head, cutting out all weak and undesirable growth each year. The top may be kept trimmed back to facilitate picking.

The tree thrives best in a loose, well drained, sandy loam. A clay or heavy adobe soil that is not well drained is not suitable for its best development.

It is advised to fertilize the first three years with 1 to 3 pounds per tree of commercial fertilizer containing 3% nitrogen, 5% phosphoric acid, and 5% potash. After the third year, when the trees have come into bearing, a fertilizer containing 5% nitrogen, 6% phosphoric acid, and 12% potash should be used in about the same amount, increasing the amount each year until the full bearing capacity is reached.

Irrigate the same as for oranges.

Transplanting is best done in early spring, after the cold weather of winter has hardened the wood and before the trees have started into new growth,—usually from March 1 to April 15, according to locality and season.

Mexican avocados will stand as much frost as the orange,—some varieties a little more. If planted in locations subject to heavy frosts, some winter protection should be given the trees for the first two years. The danger from frost lies not so much, however, in the injury done to the trees as in the freezing of the blossoms of the early-blooming varieties. In frosty districts, therefore, plant only the late-blooming (winter bearing) varieties, and in this way safety will be secured.

What better investment could be made than a large and scientifically managed avocado plantation, with only the best and most approved stock planted therein?—David L. Crawford.

The Future of the Avocado

It may seem to be making a strong statement to say that within the next quarter of a century the avocado will rank with the orange as a commercial fruit in Southern California. But there is a foundation of fact underlying this statement, and the reasons seem sufficient, indeed, to warrant the belief that it may become even more important.

First, the adaptability of the avocado to this climate has been proved beyond the possibility of a doubt. There are one hundred or more trees now bearing, ranging in age from three to twenty-five years, scattered over the southern end of the State from the cool seacoast to the hot and dry interior valleys. These trees embrace a number of widely different types, sizes and characters of fruits. This test of adaptability ought to be sufficient to satisfy the most skeptical.

Second, the food value of the fruit is the main basis for the foregoing statement. It presents in a most easily digested and assimilated form as high as 12 to 18 per cent of fat, which places the fruit in a class with the staple food products, instead of being a mere luxury as is the case with many fruits. The taste for the avocado is not always acquired upon first trial, but a few repetitions are usually sufficient to make anyone extremely fond of it. The price is now prohibitive to most and only a few have had opportunity to acquire the taste, but as the production becomes greater and the price lower, an almost unlimited demand will be created throughout the whole country. Culture of the fruit in the United States will be restricted to limited areas in Southern California and South Florida, and consequently the danger of over-production will be eliminated. As rapidly as price and production will permit, the avocado will become an important and indispensable part of the daily food of the majority of the people of the United States.

The avocado industry will become the most profitable fruit industry in the United States. A bearing avocado orchard will be of greater value than a national bank.—E. V. Blackman.

Prices

Budded Avocados.—At the date of this writing (November 1, 1911) we have 25,000 seedlings in the field. About 10,000 of these are large enough for budding. A part of these have been budded, the balance are being rapidly worked over, and the entire lot of 25,000 will have been budded by April 1, 1912.

It will thus be seen that we are not ready for the delivery of budded trees. We will be able to deliver a limited number by April or May next, and any quantity by the following fall. At the latter date this stock will average from 2 to 3 feet in height.

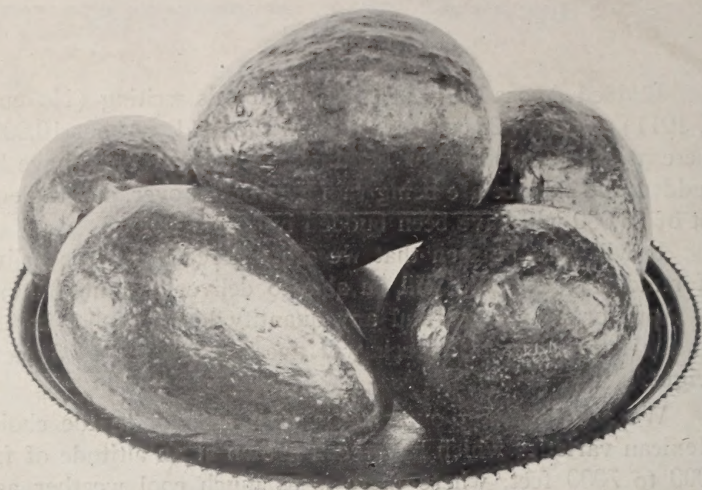
We are confining ourselves almost entirely to the choicest Mexican varieties which have been grown at an altitude of from 5000 to 7000 feet, where there is as much cool weather as in Southern California,—oftentimes even lower temperatures than are experienced here. Thus the hardiness of this stock is assured. These varieties include round and pear shaped fruits, weighing from a pound to a pound and a half each, with strong skins of green or purple color, and of the very finest flavor and quality. It will be possible for us later to submit to intending purchasers a list of varieties, named and correctly described.

The price of this choice stock will be as follows:

For a single tree, \$3; for 10, \$2.85 per tree; for 100, \$2.75 per tree; for 1,000, \$2.50 per tree. Terms, 25% when order is placed, balance at time of delivery.

As the demand for budded avocados has been far in excess of the available stock, and doubtless will continue to be for some time, it is worth while for intending purchasers to place their orders early, as all orders will of course be filled in rotation, and early orders will be sure of stock and of the varieties desired, while the later ones may not be.

Seedling Avocados.—We can fill orders for seedling avocados at any time. We strongly recommend the seedling trees for ornamental purposes. They can be used effectively where almost any other ornamental tree is acceptable. Besides making a handsome, evergreen tree, in 70 or 80% of cases these seedlings will bear good fruit; fruit of good quality, usually not so large as budded trees will yield, and not an even character (that is, the fruit from different trees will likely differ in size and color)



The Montezuma Avocado (from tree shown on title page.) An "ideal" Avocado.

but fruit that will be in every way desirable for family use, and well worth having. Plant a few seedling trees where you would use other ornamentals, and derive the double benefit.

Price, 2 to 3 feet high, \$1.00 each; for 10, 85 cents each; for 100, 75 cents each. These can be shipped at any time, either by freight or express.

A cordial invitation is extended to you to visit our nurseries. Take the Altadena car, going north on Fair Oaks Avenue, in Pasadena, get off at Calaveras street, Altadena, and go one block and a half East.

WEST INDIA GARDENS

F. O. POPENOE, *President and Manager*
T. U. BARBER, *Secretary and Treasurer*

SUBTROPICAL PLANTS AND TREES

CALAVERAS AND MARENGO STREETS
ALTADENA, CALIFORNIA

Telephones { Home 1577 } (Pasadena Exchange)
 { Main 2129 }